

Claims

The following claims further illustrate certain features of the invention:

1. A method of ablating myocardial tissue within the
5 wall of the heart or within the wall of a blood vessel connected to the heart comprising:

(a) supplying microbubbles to the circulatory system of a mammalian subject so that the microbubbles perfuse the myocardial tissue of the subject; and

10 (b) while the microbubbles are present in the myocardial tissue, applying ultrasonic energy to the wall of the heart or to the wall of a blood vessel connected to the heart so that myocardial tissue having microbubbles present therein is heated by the ultrasonic energy and ablated.

15 2. A method as claimed in claim 1 wherein said step of supplying microbubbles is performed by introducing the microbubbles into the LA or LV.

20 3. A method as claimed in claim 2 wherein said step of applying ultrasonic energy is performed by actuating an ultrasonic transducer carried on a catheter structure extending into or through the LA or LV, and wherein said step of supplying microbubbles is performed by administering said microbubbles through said catheter assembly.

25 4. A method as claimed in claim 1 wherein said step of supplying microbubbles is performed by introducing the microbubbles into the aorta.

30 5. A method as claimed in claim 1 wherein said step of supplying microbubbles is performed by introducing the microbubbles directly into a coronary artery supplying blood to the portion of myocardial tissue to be ablated.

6. A method as claimed in claim 1 further comprising the step of determining when the microbubbles are present in the myocardial tissue to be ablated by ultrasonic imaging of the myocardial tissue.

7. A kit for ablating myocardial tissue of a mammalian subject comprising:

(a) an ultrasonic energy application device adapted to apply ultrasonic energy to the wall of the heart or to a blood vessel connected to the heart; and

(b) microbubbles adapted for administration within the circulatory system of the subject.

8. A kit as claimed in claim 7 further comprising a catheter adapted for insertion into the aorta or into a cardiac artery for administering said microbubbles.

9. A kit as claimed in claim 7 wherein said ultrasonic energy application device is adapted to administer ultrasonic energy to the wall of a blood vessel connected to the heart.

10. A kit as claimed in claim 9 wherein said ultrasonic energy application device is adapted to administer ultrasonic energy to the wall of a pulmonary vein.

11. A kit as claimed in claim 7 wherein said ultrasonic energy application device is adapted to administer ultrasonic energy to the wall of the heart.

12. A kit as claimed in claim 7 wherein said ultrasonic energy device includes a catheter structure and said catheter structure extends into or through the LA or LV when the device is in an operative condition, and wherein said catheter structure includes a lumen having an opening, said opening communicating with the LA or LV when the device is in said operative condition, whereby the microbubbles can be administered by way of said catheter structure.